

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: 87201797.5

(51) Int. Cl.4: E04F 10/04 , A01G 9/22 ,
E04H 15/38

(22) Date of filing: 14.09.87

(30) Priority: 12.09.86 NL 8602313

(43) Date of publication of application:
23.03.88 Bulletin 88/12

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

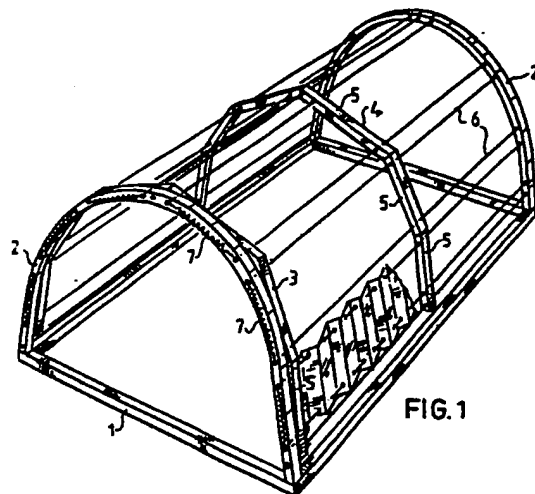
(71) Applicant: Schön, Siegfried Joachim
3, Kwadestraat
NL-4879 NH Etten-Leur(NL)

(72) Inventor: Schön, Siegfried Joachim
3, Kwadestraat
NL-4879 NH Etten-Leur(NL)

(74) Representative: Hoorweg, Petrus Nicolaas et al
OCTROOIBUREAU ARNOLD & SIEDSMA
Sweelinckplein 1
NL-2517 GK The Hague(NL)

(84) Sunblind assembled into an arcuate form.

(87) A sunblind, consisting of a first (3, 13) and second (4, 14) support bar which can be moved relative to each other, having attached between them a web of material (12) for keeping out the sun, this material being supported between the bars by one or more tensioning cords, wherein each support (3, 13, 4, 14) takes an identically arcuate form and consists of straight parts arranged at an angle to one another, whereby fitted between each part is a separate web of material (12). Owing to the use of the curved support bars (3, 13, 4, 14) it is possible to completely screen off a curved skylight by moving the support bars towards or away from each other, so that more or less of the surface of the skylight is screened by the web of material.



EP 0 260 771 A1

Sunblind assembled into an arcuate form

The invention relates to a sunblind, consisting of a first and second support bar which can be moved relative to each other, having attached between them a web of material for keeping out the sun, this material being supported between the bars by one or more tensioning cords.

Known sunblinds function usually in a flat plane, for example along a vertical upright window or door opening, in order to more or less cover this opening. Because of the use of the tensioning cords it is not possible to guide the webs of material along an arcuate plane, so that for example skylights can also be screened off.

The invention has for its object to give the sunblind a form such that screening of curved or arcuate surfaces is then possible.

In accordance with a first embodiment the sunblind is distinguished in that each support bar takes an identically arcuate form and consists of straight parts arranged at an angle to one another, whereby fitted between each part is a separate web of material.

Owing to the use of the curved support bars it is possible to completely screen off a curved skylight by moving the support bars towards or away from each other, so that more or less of the surface of the skylight is screened by the web of material. The support bars can hereby be carried along a separate guiding, but, in accordance with a preferred embodiment, the tensioning cords are also guide cords for the support bars, which guide cords are disposed in a curving plane.

According to a second embodiment, whereby the sunblind is provided with two or more separate web portions which are connected to one another series-wise, this embodiment is distinguished in that arranged at least at one side of the assembled blind is a curved guiding for guiding at least one of the ends of the bars, whereby the tensioning cords are pre-tensioned between the bar pieces associated with each web portion by a spring-mounted member.

With this embodiment a flat circle segment can be covered, while an arcuate opening can also be screened.

The invention also extends to embodiments which are assembled from both the previously mentioned possible embodiments.

The web material is preferably a pleated material.

The invention is further elucidated in the figure description below of three embodiments. In the drawing:

figure -1 shows a perspective top view of a first embodiment, whereby the support bars display a curved form,

figure 2 is a diagram associated with figure 1 of the running of the operating cords,

figure 3 is a diagram associated with figure 1 of the running of a tensioning cord,

figure 4 shows a perspective top view of a portion of a second embodiment, whereby the pleated webs are connected series-wise to one another,

figure 5 shows a flat view of the assembled sunblind from figure 4 with the running of tensioning cords and operating cords indicated - schematically therein,

figure 6 shows an upright front view of a third embodiment.

Shown in the figures 1-3 inclusive is a sunblind which is arranged between a curved skylight, whereby in figure 1 the frame 1 is drawn - schematically. The glass panels or other transparent material are omitted here for the sake of clarity.

The frame 1 consists of a horizontal framework of for instance rectangular section, over the short side of which is placed an arcuate profile 2. the profile section of bars 1 and 2 is random and falls otherwise outside the scope of the invention.

the sunblind proposed according to the invention is formed with two support bars 3 and 4, which are identical in form and consist of a number of straight portions 5 positioned at an angle to one another such that the arcuate form of each support bar 3, 4 virtually corresponds to that of the arcuate profiles 2.

Arranged between each of the straight portions 5 located opposite one another is a web of sunblind material of, for instance, pleated material. This results in an assembled sunblind having webs of material arranged in parallel adjacent to one another, which, when for example the bar 4 is moved, will all simultaneously fold out or contract.

Arranged for a good guiding of bar 3 and/or 4 between the arcuate profiles 2 are tensioning cords 6, whereby in each case two tensioning cords 6 cooperating with a portion 5 are on the one hand attached to the profile 2, and on the other are connected to each other by a draw spring 7, see figure 3, such that a determined tensile force is generated in the cords 6 between both arcuate profiles 2. Bars 3, 4 are provided with suitable passage openings for feeding through the tensioning cords, so that the bars can be moved freely back and forth. The guide cords 6 can serve in addition as support for the material web, for exam-

ple the pleated material, arranged between the portions 5, for which purpose each pleat of the material is provided with a passage opening through which is fed the cord 6.

For easy activation of the sunblind a number of operating cords are fitted, which can be reached for example from the floor area. The running of the operating cords is explained in figure 2. The starting point here are three cords 8, 9, 10 in loop form, each of which is fastened at a particular point A, B, C to for instance the arcuate bar 4, these points being uniformly distributed over the length of bar 4. As a result of simultaneous activation of the loop-form cords 8, 9, 10 the bar 4 can be moved back and forth between the support bar 3, which is here attached firmly to the foremost profile 2, and the arcuate profile 2 located opposite by pulling on either the one part or the other part of the downward hanging portion 11 of all the cords.

The figures 4, 5 show a possible second embodiment, whereby the starting point is a number of webs of sunblind material, linked series-wise one after another in order to form an assembled blind of material. Arranged between each web portion 12 is a support bar 13 or 14. In the embodiment shown here three web portions are fitted, but it will be apparent that more or fewer can be used.

In the embodiment shown the bars 13, 14 are connected to each other, but it would be equally possible here to employ a single bar profile for this purpose.

In accordance with a feature of the invention at least one end of the bars 13, 14 is guided along an arcuate guiding 15. In the embodiment as in figures 4 and 5 both ends are carried through an identical curve 15, which guiding 15 can for instance be a part of the skylight frame profile. Both arcuate guidings 15 are connected to each other by a transverse profile 16, see figure 5, which also forms part of the fixed frame profile.

It will be apparent that as a result of guiding the bars 13, 14 in a manner similar to that in figure 1 an arcuate skylight can be screened, not in lengthwise direction, however, but in transverse direction. The extent to which the curve is followed accurately is in large measure determined by the length of each web of material.

A characteristic aspect is that the web material is supported by tensioning cords 17 arranged between bars 13, 14, each of which cords is placed under pre-tension by a spring-mounted member 18, here for example a spiral spring accommodated in one of the bars.

For central operation, that is, for screening of the opening to a greater or lesser extent, at least one of the end bars, here bar 14, is attached to two operating cords 19, 20 in loop form, whereby each operating cord is wound round a pulley 21 fitted on the other end bar, here bar 13.

As a result of pulling the loop-form operating cords on either the one part or the other part, bar 14 slides along the guiding 15 in a respectively upward or downward direction, whereby the distribution of the intermediate bars 13, 14 will remain uniform owing to the use of the tension springs 18.

Although not strictly essential, the operating cords in the embodiment shown are also guided through holes running through the ends of each intermediate bar 13, 14.

Figure 6 shows a third embodiment suitable for the embodiment as according to figures 4 and 5.

In this case also the webs of material are formed series-wise one after another into an assembled blind. The intermediate bars 13, 14 arranged on either side of each web portion 12 are attached for pivoting on one end at 22 to a support construction that is not explained further. The other end of the intermediate bars 13, 14 is carried slidably along an arcuate guiding 23. Each web of material is again supported by tensioning cords 17 arranged between the bars, these cords being pre-tensioned by means of a draw spring 18 as according to the embodiment in figure 5.

By moving one of the end bars, for example bar 14 on the left in figure 6, back and forth in the direction of the arrow P₁ a circle segment-shaped opening can be screened off.

As a result of the use of the pleated material the part segments can easily be filled up.

The invention is not limited to the embodiments described above. It is thus also possible in the embodiment from figure 4 to employ a bar in arcuate form as in figure 1 without detracting from the idea of the invention. The running of the tensioning cords and operating cords as shown can likewise be formed otherwise in an appropriate manner.

Claims

1. Sunblind, consisting of a first and second support bar which can be moved relative to each other, having attached between them a web of material for keeping out the sun, this material being supported between said bars by one or more tensioning cords, characterized in that each support bar takes an identically arcuate form and consists of straight portions arranged at an angle to one another, whereby fitted between each said part is a separate web of material.

2. Sunblind as claimed in claim 1, characterized in that two or more tensioning cords for the webs of material form guide cords for one or both bars.

3. Sunblind consisting of a first and second support bar which can be moved relative to each other, having attached between them a web of material for keeping out the sun, this web being supported between said bars by one or more tensioning cords, whereby the bars of two or more separate web portions are connected to one another series-wise, characterized in that arranged at least at one side of the assembled blind is a curved guiding for guiding at least one of the ends of said bars, whereby said tensioning cords are pretensioned between the support bars associated with a web portion by a spring-mounted member.

4. Sunblind as claimed in claim 3, characterized in that the guiding is curved out of the flat plane through the web of material.

5. Sunblind as claimed in claim 3, whereby the bars and each web portion are formed as according to the sunblind as claimed in claim 1.

6. Sunblind as claimed in any of the foregoing claims, characterized in that the web of material is formed by a strip of pleated material.

5

10

15

20

25

30

35

40

45

50

55

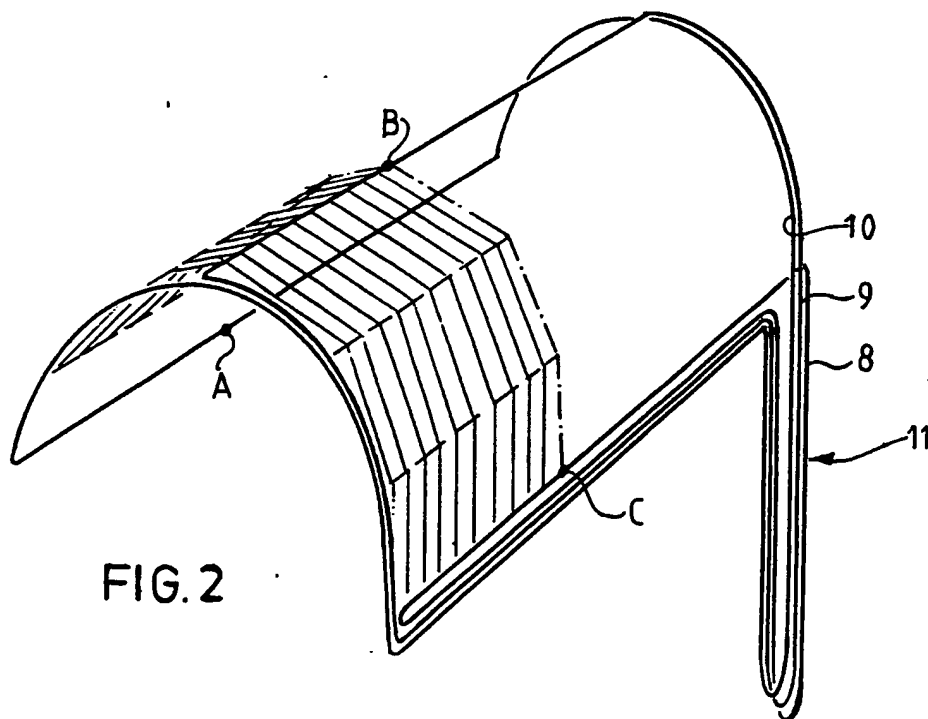
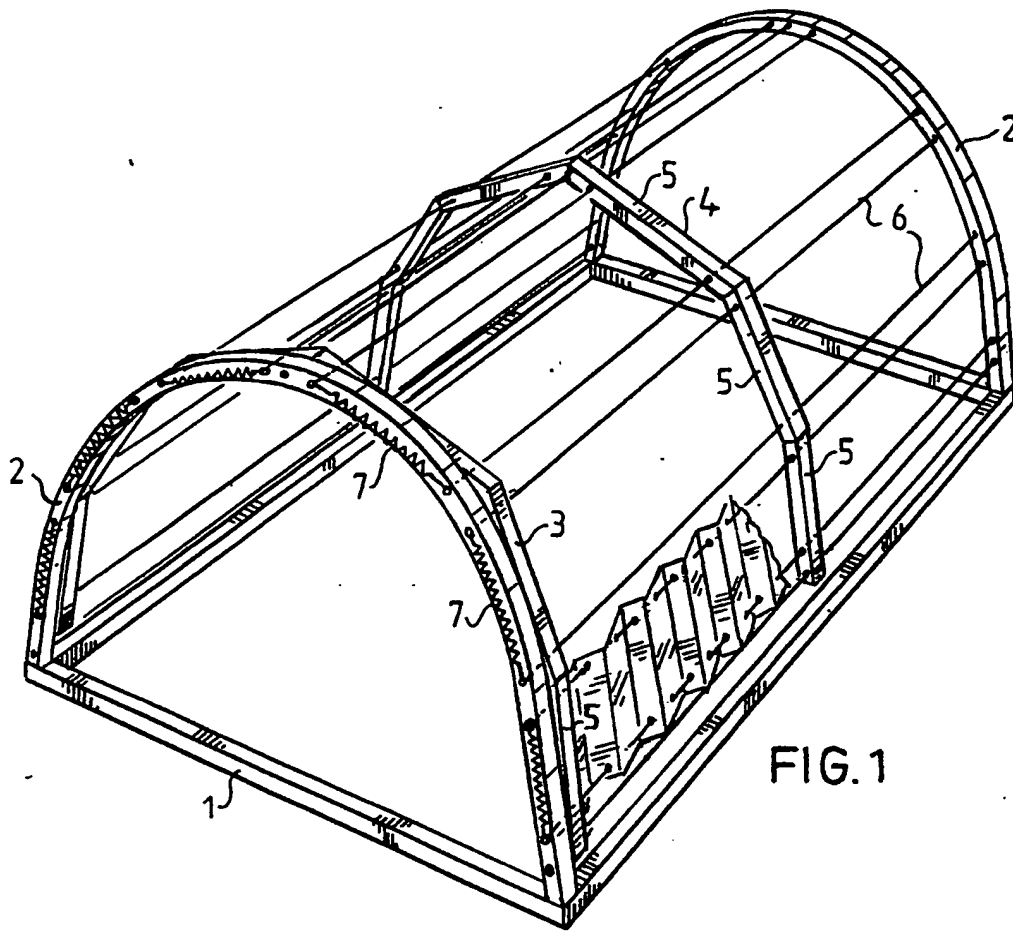


FIG. 3

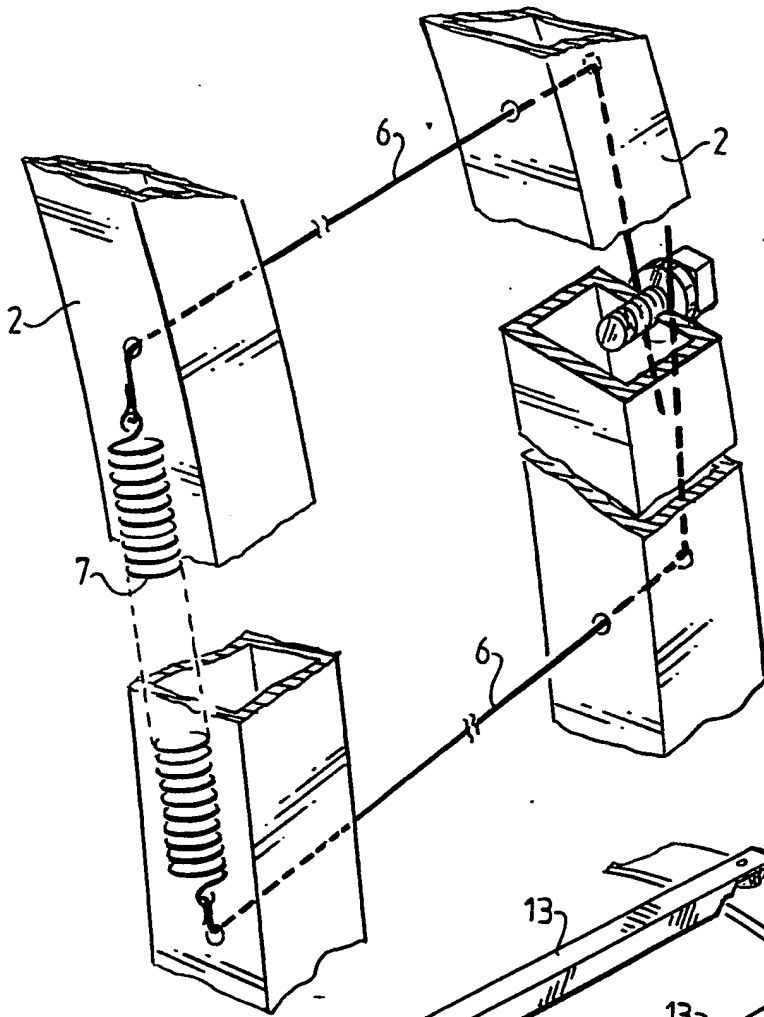
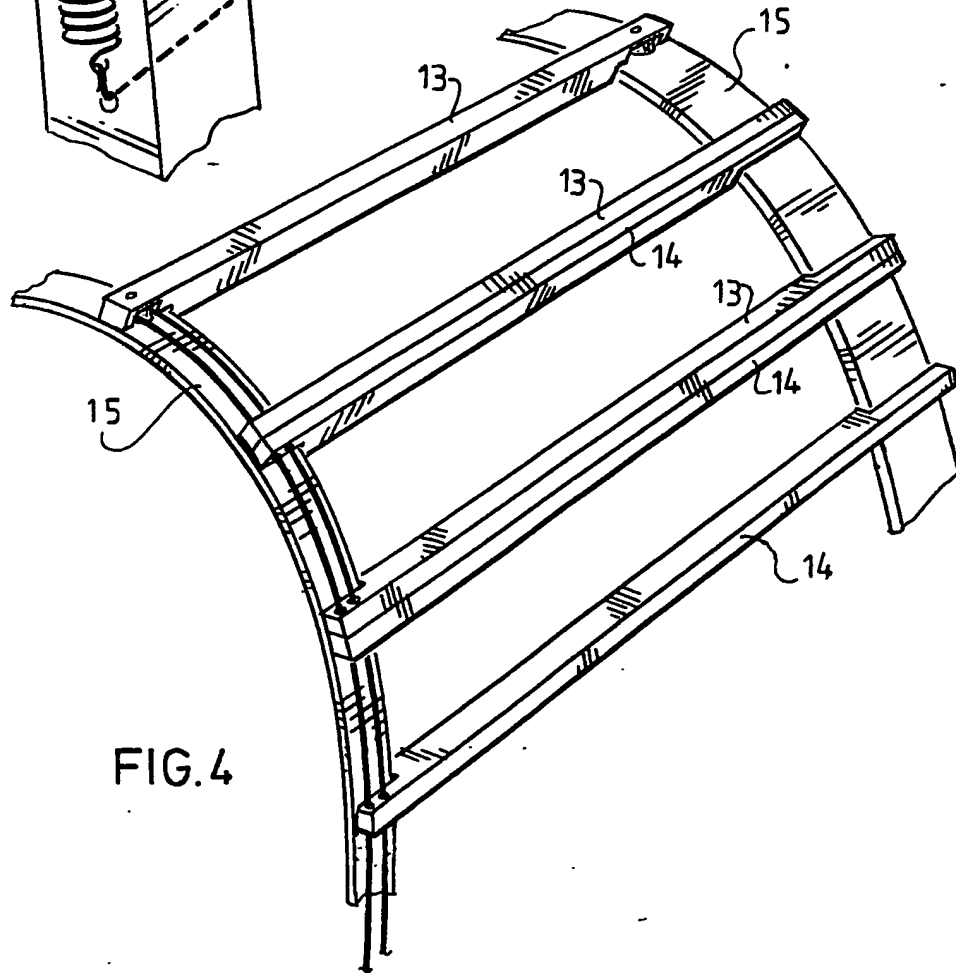


FIG. 4



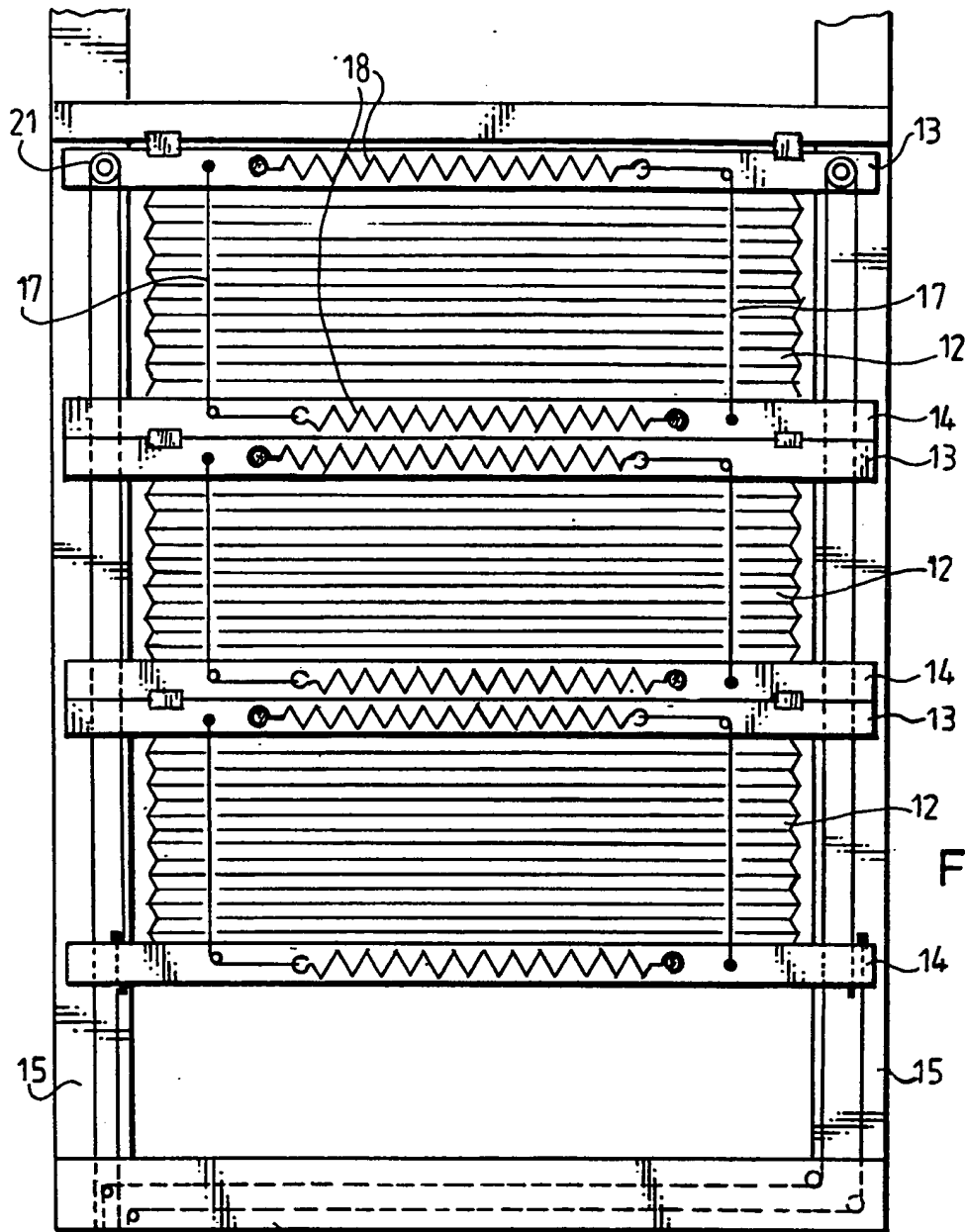


FIG. 5

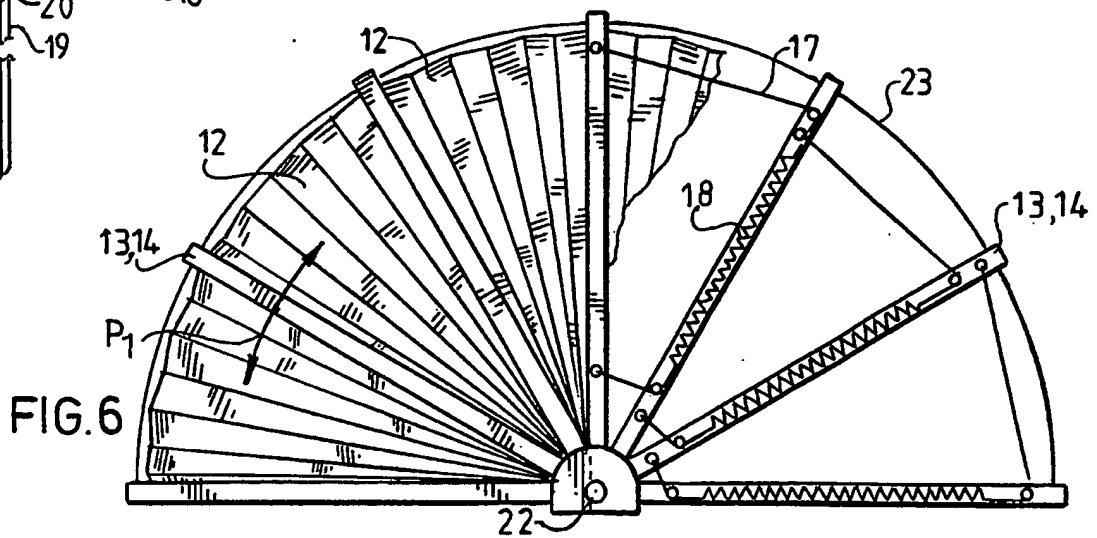


FIG. 6



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	US-A-3 415 260 (HALL) * Column 3, line 27 - column 6, line 27; figures 1-9 *	1-3,5,6	E 04 F 10/04 A 01 G 9/22 E 04 H 15/38
A	US-A-4 565 230 (VAN RIJN et al.) * Column 3, line 1 - column 5, line 59; figures 1-6 *	1-3,5,6	
A	FR-A-2 574 844 (GUERIN) * Page 2, line 10 - page 5, line 19; figures 1-3 *	1,3	
A	FR-A-2 497 860 (JAVOISE) * Page 2, line 12 - page 3, line 36; figures 1-4 *	1-4	
A	FR-A-2 063 273 (DECOR SPECIALTIES) * Page 3, line 4 - page 6, line 7; figures 1-8 *	1-3,6	
A	GB-A-2 151 682 (RCA CORP.) * Page 1, line 72 - page 2, line 109; figures 1,2 *	1-3,6	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	US-A-4 557 309 (JUDKINS) * Column 2, line 35 - column 4, line 51; figures 1-8 *	1-3	E 04 F A 01 G E 04 H
P,Y	EP-A-0 195 483 (SCHÖN) * Page 4, line 10 - page 8, line 31; figures 3-7 *	1-3,5,6	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20-11-1987	Examiner AYITER J.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			